

## REMARKS

This paper is filed in response to the Office Action mailed July 6, 2007 (hereinafter "Office Action"). Claims 1-3, 6-8, 11, 12, 17-20, 22, 25-27, 30-35, 38-42, 44-46, and 48 are currently pending in the application. The Office Action rejected Claims 1-3, 8, 11, 12, 35-27, 32-35, and 40 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,648,061, issued to Merriman et al. (hereinafter "Merriman et al."). The Office Action rejected Claims 6, 7, 17-20, 22, 30, 31, 38, 39, 41, 42, 44-46, and 48 under 35 U.S.C. § 103(a) as being unpatentable over Merriman et al. in view of U.S. Patent No. 5,937,392, issued to Alberts (hereinafter "Alberts"). For the following reasons, applicants respectfully submit that Claims 1-3, 6-8, 11, 12, 17-20, 22, 25-27, 30-35, 38-42, 44-46, and 48 are not rendered obvious by Merriman or Merriman in view of Alberts because Merriman and Alberts, either alone or in combination, fail to teach or suggest a rotation frequency based upon a sum of the number of display opportunities encountered and an estimated number of display opportunities to be encountered for any remaining time in the predetermined period of time.

Prior to discussing more detailed reasons why applicants believe that all of the claims of the present application, as amended, are allowable over the cited references, a brief description of the present invention and the cited references is presented.

### Summary of the Present Invention

The present invention is generally related to a system and method for dynamically managing the delivery of media, such as advertisement media. More particularly, the present application dynamically selects advertisement media to deliver by calculating a rotation frequency for several items of media. The rotation frequencies are used to calculate an advertisement priority score for each item of media. The priority score is used to select advertisement media to deliver.

In one example of the present invention, the rotation frequency may be defined in terms of the quotient between a target goal for a media campaign (e.g., the number of media delivery

opportunities contractually agreed upon) and the total number of advertisement media display opportunities (i.e., page views) encountered during the entire advertisement delivery campaign. The number of advertisement media display opportunities corresponds to a sum of a predicted number page views for time periods yet to occur and actual page views that have occurred during the advertisement delivery campaign. By way of example, calculating the rotation frequency as a product of the target goal and the total number of advertisement media display opportunities, a rotation frequency of "1" is indicative of an accurate prediction of display opportunities irrespective of how the actual number of display opportunities compares with the target goal.

Numerous advantages may be realized by the system or method recited in the claims of the present application. In one aspect, advertisement media may be more effectively and efficiently delivered thereby increasing the likelihood that the impression goals for delivery campaigns are realized. In another aspect, dynamic adjustments in the delivery of advertisements provide the ability to compensate for fluctuations in the number of page views encountered. Additional advantages may also be realized within embodiments of the present invention.

#### Summary of Merriman et al. (U.S. Patent No. 5,948,061)

Merriman is purportedly directed toward a method and apparatus for targeting the delivery of advertisements over a network. In accordance with the teachings of Merriman, the method and apparatus attempts to target advertisements based on the user's preferences, how often the user has previously seen the advertisement, and how frequently the advertisement has been viewed. For advertisements that match the user's preferences and for which the user has seen less than a predetermined threshold, a satisfaction index ("SI") is calculated according to the following formula:

$$SI = \frac{n}{N} * \frac{end - start}{now - start}$$

Where:

n: the number of times the particular advertisement has been viewed by anyone;

N: the number of times the advertisement is to be seen by anyone;

end-start: the total number of days that the advertisement is scheduled to run; and

now-start: the number of days that the advertisement has run to date.

The SI for matching advertisements is compared and the one with the smallest SI is selected.

Merriman fails to teach or suggest dynamically adjusting a rotation frequency based upon a quotient defined by a numerator corresponding to a delivery goal and a denominator corresponding to a sum of a number of display opportunities encountered and an estimated number of display opportunities to be encountered. In contrast, Merriman is limited to comparing a current number of advertisement delivery opportunities against a target campaign.

Summary of Alberts (U.S. Patent No. 5,937,392)

Alberts is purportedly directed toward a banner advertising display system. In accordance with the teachings of Alberts, the system controls the frequency and distribution with which ads are served throughout the day. Each ad is associated with a counter (M) that has a default value. A counter value of zero indicates that the ad is to be served. A pointer cycles through the ads, decrementing each M counter as it goes, until it identifies an ad that has an M counter value of zero. Once an ad is served, its M counter value is reset to its default value. A second counter (D) is also maintained for each ad, and its value is changed each time the associated ad is served, thereby tracking the number of times the ad has been served. A third counter (A) is used to adjust the default value assigned to M when the counter is reset, thereby adjusting the frequency with which the ad will be served.

In addition to, and distinct from, maintaining counters to control the frequency and distribution of serves, Alberts also teaches that the number of hits for a particular service through which ads are served may be predicted based on the past history of that service. By predicting

the number of hits to a particular service, the system of Alberts can adjust how often ads are served or what type of ads are served (e.g., paid, free, trial), to that service in response to hits. Additionally, Alberts discusses breaking up the hours in a day based upon frequency of hits to a service to alter the granularity with which hits are monitored.

In particular, Alberts describes that predicting hits is used to accommodate the situation in which the number of hits per day for a service is undersold compared to the estimated and/or actual number of hits. "For example, if a system is typically receiving 500,000 hits per day and only 250,000 hits per day have been sold, the system can insert banners for charitable organizations, free serves on a trial basis, or public service announcements." (Alberts, Col. 6, lines 27-35.)

Alberts fails to teach or suggest adding the number of opportunities encountered and the number of opportunities to be encountered for calculating a rotation frequency.

Rejection of Claims 1-3, 8, 11, 12, 35-27, 32-35, and 40 Under 35 U.S.C. § 103(a)

As noted above, Claims 1-3, 8, 11, 12, 35-27, 32-35, and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Merriman et al.

Independent Claim 1

Claim 1, as currently amended recites a method for calculating and dynamically adjusting a rotation frequency for media delivery. Claim 1 specifically recites:

1. In a computer, a computer implemented method for managing media delivery for a plurality of media, the method comprising:
  - for a defined period of time, calculating a dynamic rotation frequency for each of the plurality of media by the computer, wherein the period of time corresponds to a set of discrete time segments, wherein each dynamic rotation frequency is based upon a quotient defined at a current time segment in the defined period of time by a numerator corresponding to a delivery goal for a corresponding one of the plurality of media for the defined period of time and a denominator corresponding to a sum of an estimated number of display opportunities for time segments in the defined period of time yet to be encountered during a predetermined period of time and actual display opportunities for time segments in the defined period of time already encountered;
  - obtaining a request for media by the computer;

determining one or more of the plurality of media to deliver in response to the request by the computer, wherein the determination of the one or more of the plurality of media corresponds to the dynamic rotation frequency of the determined one or more of the plurality of media;

outputting the one or more determined media by the computer; and

dynamically adjusting the dynamic rotation frequency for the one or more output media by the computer, wherein the rotation frequency is dynamically adjusted by updating the sum of the estimated number of display opportunities for time segments in the defined period of time yet to be encountered during a predetermined period of time and actual display opportunities for time segments in the defined period of time already encountered by replacing an estimated number of display opportunities for the current time segment with an actual number of display opportunities for the current time segment.

Applicants respectfully submit that Merriman either alone or in view of Alberts fails to teach or suggest a rotation frequency dynamically calculated using a sum function. As recited in Claim 1 of the present invention, the rotation frequency is function of a current time sequent of a quotient. The numerator of the quotient corresponds to a delivery goal for a corresponding one of the plurality of media for the defined period of time. The denominator corresponding to *a sum* of an estimated number of display opportunities for time segments in the defined period of time yet to be encountered during a predetermined period of time and actual display opportunities for time segments in the defined period of time already encountered. By reciting a sum function, both the total number of display opportunities for the time period is reflected in the rotation frequency equation. Thus, the recited rotation frequency will only be modified if the total number of display opportunities is above or below the target goal irrespective of the number of current display opportunities compared to the target goal.

In contrast to the sum function of the present invention as recited in Claim 1, Merriman teaches a rotation frequency defined in terms of a quotient between an impression goal ( $N$ ) and the views seen so far ( $n$ ) multiplied by a representation of remaining duration (end-start)/(now-start). (Merriman, Col. 6, lines 35-36.) Thus, Merriman relates the teaching of simplistic linear analysis in which a "satisfaction index" is based solely on a comparison of a current number of display opportunities to date as compared to the target goal. Merriman accounts for future

display opportunities by normalizing the ration over the remaining time in the advertisement campaign. Because of this simplistic linear approach, Merrimen would have the effect of yielding lower satisfaction index values (and thereby increasing the frequency of ad delivery) for any low period of display opportunities (such as weekday nights). In scenarios where the low display opportunities were predicted/expected, the system in Merriman would under estimate future display opportunities (such as weekends) and over deliver an ad.

Stated simply, Merriman does not contemplate using the sum function as recited in Claim 1 because the number of views encountered ( $n$ ) is multiplied by the remaining duration  $((\text{end-start})/(\text{now-start}))$  to calculate a rotation frequency. By using only the opportunities encountered in calculating the rotation frequency, the advantage of calculating performance in terms of a rotation frequency using both the opportunities encountered and the number of opportunities to be encountered is not taught or suggested. Merriman's use of multiplication by a ratio of time encountered vs. time spent is its attempt at predicting future display opportunities. However, because it is not a sum as recited in the claims, it does not reflect a predication of display opportunities. For example, the equation in Merriman cannot simply account for non-linear predictions.

The Office Action asserts that Merriman in view of Alberts teaches Claim 1, as amended, of the present invention. Specifically, the Office action states:

Merriman et al does not teach the use of estimated impressions for starting an ad campaign scheduling frequency. .... Alberts teaches a system that can predictively model the number of hits (ad opportunities) in various time regions. For example, the system can be used to predict that weekend page views are slower than during working hours of M-F 8A-5P. Alberts uses recurring patterns, historical statistics and current statistics to provide control of ad distribution/impressions[6:43-45, 66-67]. It would have been obvious to one of ordinary skill at the time of the invention to have used such historically-based predictions to initiate the system of Merriman et al so that the initial ad frequencies are given a balanced start (not too fast or too slow). Both Merriman et al and Alberts use current statistics to further dynamically change the distribution schedule. Merriman et al teaches the use of estimated ad opportunities left. (Office Action, pages 4-5.)

Further, the Office Action states that:

The teachings of Alberts are taken to provide one or ordinary skill with motivation to break up the campaign duration of Merriman et al into time segments (i.e. array elements) and treat the predicted page views differently from each other, rather than using Merriman et al's more simple linear approach (where each time period is assumed to have equal page views). (Office Action, pages 6-7.)

Regardless of the teachings of Alberts, applicants respectfully submit that combining Alberts with Merriman would change the principle operation of Merriman and therefore cannot establish *prima facie* obviousness. (M.P.E.P. § 2143.01.) Merriman calculates display opportunities to be encountered by taking the number of views encountered (*n*) multiplied by the remaining duration ((end-start)/(now-start)). Because Merriman treats display opportunities to be encountered as a function of display opportunities encountered as a function of linear time, combining Alberts treatment of page views (i.e., display opportunities encountered and display opportunities to be encountered) differently would render Merriman unworkable. The combination would require a nonsuggested and substantial modification of the basic satisfaction index formula. Therefore, the combination of Merriman and Alberts cannot establish *prima facie* obviousness.

Regardless, Merriman in view of Alberts also fails to teach or suggest dynamically calculating a rotation frequency based on the sum of the number of display opportunities encountered and the number of display opportunities to be encountered as recited in Claim 1 of the present application. Alberts teaches that the number of hits for a particular service through which ads are served may be predicted based on prior experience of that service. (Alberts, Col. 6, lines 42-45, 57-59.) Alberts discloses breaking up the hours in a day based upon frequency of hits to a service to alter the granularity with which hits are monitored. (Col. 6, lines 45-50.) Another way to implement such distribution is to use statistics that are being provided from an ad server. (Col. 6, lines 57-60.) The distribution can be based on past traffic data and used with current statistics collected from the ad servers. (Col. 6, line 66-Col. 7, line 2.) Alberts is silent to the method for combining the number of display opportunities encountered and the number of display opportunities to be encountered. Further, any sum function used

within Alberts would be inconsistent with the multiplication function used within Merriman. Therefore, the prior art fails to teach or suggest dynamically calculating a rotation frequency using a sum function.

Generally described, under 35 U.S.C. § 103(a), a *prima facie* case of obviousness can be established only if the cited references, alone or in combination, teach each and every element recited in the claim. *In re Bell*, 991 F2d 781 (Fed. Cir. 1993.) Merriman and Alberts, alone or in combination, fail to teach or suggest calculating a dynamic rotation frequency based upon a quotient defined by a numerator corresponding to a delivery goal and a denominator corresponding to a sum of a number of display opportunities encountered and an estimated number of display opportunities to be encountered. For the above reason, applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of Claim 1 and assert that Claim 1 is patentable under 35 U.S.C. § 103(a) over the combination of Merriman and/or Alberts.

Independent Claims 11, 19, 25, 33, 41, and 45

For purposes of this discussion, Claims 11, 19, 25, 33, 41, and 45 will be discussed together because the elements discussed herein are similar for each claim. In particular, Claim 11, as currently amended, recites a dynamic rotation frequency "based upon a quotient defined by a numerator corresponding to a delivery goal for an advertisement media campaign and a denominator corresponding to a total number of display opportunities encountered in a defined period of time, wherein the total number of display opportunities is the sum of an estimated number of display opportunities for time segments subsequent to a current time and actual display opportunities for time segments prior to the current time." Additionally, Claim 11 recites that the dynamic rotation frequency is adjusted "by updating total number of display opportunities encountered in a defined period of time by replacing an estimated number of display opportunities for the current time segment with an actual number of display opportunities for the current time segment."



Similarly, as amended, Claim 19 recites "selecting a number of array elements for the dynamic array by the computer, wherein each array element corresponds to time segments in a fixed time period and wherein the sum of the array element time periods equal the time period for generating the delivery goal" and "at a current time, dynamically replacing the estimated number of display opportunities with an actual number of media display opportunities encountered by the computer in the array element corresponding to the current time."

Likewise, Claim 25 recites, a dynamic rotation frequency that "is based upon a quotient at a current time in the defined period of time defined by a numerator corresponding to a delivery goal for a corresponding one of the plurality of media for the defined period of time and a denominator corresponding a dynamic sum of an estimated number of display opportunities for time units subsequent to the current time and actual display opportunities for time units occurring previous to the current time." Claim 25 also recites "updating the sum subsequent to the current time and actual display opportunities for time units occurring previous to the current time by replacing an estimated number of display opportunities for the current time with an actual number of display opportunities for the current time."

Still further, independent Claim 33 recites "calculating a dynamic rotation frequency for each of the plurality of media, wherein each dynamic rotation frequency is based upon a quotient defined by a numerator corresponding to a delivery goal and a denominator corresponding to a dynamic sum of an estimated number of display opportunities for time units subsequent to a current time and actual display opportunities for time units occurring previous to the current time, wherein the estimated number of display opportunities corresponds to a non-linear prediction of display opportunities." It further recites "dynamically adjusting the dynamic rotation frequency for the one or more output media by the computer, wherein the rotation frequency is dynamically adjusted by updating the sum subsequent to the current time and actual display opportunities for time units occurring previous to the current time by replacing an

estimated number of display opportunities for the current time with an actual number of display opportunities for the current time."

Claim 41 recites "populating each array element with an estimated number of display opportunities for the time period represented by array element, wherein the estimated number of display opportunities is based on a non-linear prediction of display opportunities" and "dynamically replacing the estimated number of display opportunities with an actual number of media display opportunities encountered." Similarly, Claim 45 recites "populating each array element with an estimated number of display opportunities for the time period represented by array element, wherein the estimated number of display opportunities is based on a non-linear prediction of display opportunities."

As Claims 11, 19, 25, 33, 41, and 45 recite similar elements as found in Claim 1, particularly summing display opportunities encountered and to be encountered, the rationale as to why applicants believe Claim 1 is in condition for allowance is applicable to these claims. Again, Merriman and Alberts, alone or in combination, fail to teach or suggest calculating a dynamic rotation frequency based upon a quotient defined by a numerator corresponding to a delivery goal and a denominator corresponding to a sum of a number of display opportunities encountered and an estimated number of display opportunities to be encountered. Accordingly applicants request the withdrawal of the rejection of Claims 11, 19, 25, 33, 41, and 45 under 35 U.S.C. § 103(a) allowance of the claims.

#### Dependent Claims 2, 3, and 6-8

Claims 2, 3, and 6-8 depend from Claim 1. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 1. Accordingly, for at least the reasons mentioned above in regards to Claim 1, Claims 2, 3, and 6-8 are allowable over the cited and applied references, alone or in combination. In addition, Claims 2, 3, and 6-8 further add to the patentability and nonobviousness of applicants' invention.

For these reasons, applicants respectfully request the withdrawal of the rejection of Claims 2, 3, and 6-8 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 12, 17, and 18

Claims 12, 17, and 18 depend from Claim 11. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 11. Accordingly, for at least the reasons mentioned above in regards to Claim 11, Claims 12, 17, and 18 are allowable over the cited and applied references, alone or in combination. In addition, Claims 12, 17, and 18 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request withdrawal of the rejection of Claims 12, 17, and 18 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 20 and 22

Claims 20 and 22 depend from Claim 19. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 19. Accordingly, for at least the reasons mentioned above in regards to Claim 19, Claims 20 and 22 are allowable over the cited and applied references, alone or in combination. In addition, Claims 20 and 22 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request withdrawal of the rejection of Claims 20 and 22 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 26, 27, and 30-32

Claims 26, 27, and 30-32 depend from Claim 25. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 25. Accordingly, for at least the reasons mentioned above in regards to Claim 25, Claims 26, 27, and 30-32 are allowable over the cited and applied references, alone or in combination. In addition, Claims 26, 27, and 30-32 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request withdrawal of the rejection of Claims 26, 27, and 30-32 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 34, 35, and 38-40

Claims 34, 35, and 38-40 depend from Claim 33. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 33. Accordingly, for at least the reasons mentioned above in regards to Claim 33, Claims 34, 35, and 38-40 are allowable over the cited and applied references, alone or in combination. In addition, Claims 34, 35, and 38-40 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request withdrawal of the rejection of Claims 34, 35, and 38-40 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 42 and 44

Claims 42 and 44 depend from Claim 41. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 41. Accordingly, for at least the reasons mentioned above in regards to Claim 41, Claims 42 and 44 are allowable over the cited and applied references, alone or in combination. In addition, Claims 42 and 44 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request a withdrawal of the rejection of Claims 42 and 44 under 35 U.S.C. § 103(a) and allowance of the claims.

Dependent Claims 46 and 48

Claims 46 and 48 depend from Claim 45. As discussed above, Merriman alone or in view of Alberts fails to teach or suggest all of the limitations recited with regard to Claim 45. Accordingly, for at least the reasons mentioned above in regards to Claim 45, Claims 46 and 48 are allowable over the cited and applied references, alone or in combination. In addition, Claims 46 and 48 further add to the patentability and nonobviousness of applicants' invention. For these reasons, applicants respectfully request withdrawal of the rejection of Claims 46 and 48 under 35 U.S.C. § 103(a) and allowance of the claims.

### CONCLUSION

Based on the amendments and remarks above, applicants respectfully submit that all of the claims pending in the present application, Claims 1-3, 6-8, 11, 12, 17-20, 22, 25-27, 30-35, 38-42, 44-46, and 48, are allowable over the cited and applied references. If the Examiner has any questions, the Examiner is invited to contact applicants' undersigned attorney at the number provided below.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Mauricio A. Uribe", followed by "Reg 44,328" and a stylized flourish.

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